

# The impact of hybridization on ICE filters

## Enabling a supplier to define

# specialized filter opportunities in hybrid applications



Combustion Engine) replacement, our client needed to understand

opportunities for developing specialized filters. Our client also wanted to assess the market potential for their existing products in the 48V mild hybrids sector.

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questions including:

- How might oil, air, and fuel filters technical requirements change due to hybrid powertrains?
- What is the value proposition of filter products for hybrid applications?
- Which of the existing E-Mobility products are suitable for hybrid applications?

The diagram illustrates the relationship between Fuel Trends (Gasoline) and Synthetic Oil Adoption, and the resulting impacts on Filter Media. It features two main circular nodes at the bottom: "Fuel Trends (Gasoline)" on the left and "Synthetic Oil Adoption" on the right. Arrows point from these nodes to a central "Filter Media" node, which is surrounded by a pink circle. The "Fuel Trends (Gasoline)" node is connected to "Fuel Aging and Oxidation" (with an arrow pointing to a grey circle) and "Increased Engine Start/Stop" (with an arrow pointing to a grey circle). The "Synthetic Oil Adoption" node is connected to "Low Oil Viscosity" (with an arrow pointing to a grey circle). The "Filter Media" node is connected to four filter-related factors: "Reduced Filter Life" (grey circle), "Aggressive Oil Oxidation" (grey circle), "Strain on Filter Media" (grey circle), and "Small Micron Rating" (grey circle). Each filter-related factor is also connected to a pink circle representing a "Filter Impact".

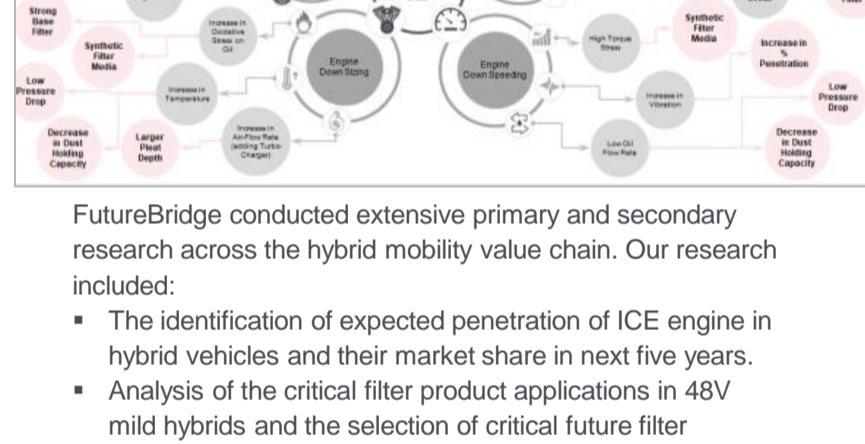
Hybrid Vehicles Trends, it

Fuel / Oil Separator

Small  
Micron  
Rating

Synthetic  
Filter  
Media

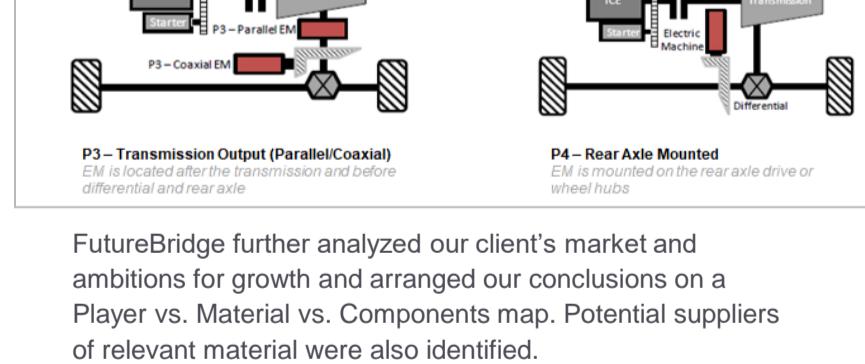
Inches of  
Engine Wear



- Identification of the technical modifications required for new applications.

The diagram illustrates four architectures of Mild Hybrid vehicles, each showing the connection points of the electric machine (EM) to the drivetrain:

- BSG – Electric Machine**: Shows the EM connected to the belt of the Belt-Sterator Generator (BSG) via a clutch, which is connected to the ICE and the Transmission.
- P1 – ISG – Crankshaft Mounted**: Shows the EM connected directly to the crankshaft via a clutch, positioned between the ICE and the Transmission.
- P2 – ISG – Crankshaft**: Shows the EM positioned after the clutch, attached (belt/integrated) to the crankshaft.
- P2 – ISG – Electric Machine**: Shows the EM connected to the P2 – ISG – Electric Machine via a clutch, which is connected to the ICE and the Transmission.



The analysis FutureBridge completed has helped our client to define filter parameters suited particularly to hybrid vehicles, resulting in clear USP and the formation of sales strategies for OEMs and engine suppliers.

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